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AUTHOR Erwin, Barbara
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ABSTRACT

To help teachers discover effective strategies appropriate for ethnic minority students, a study examined whether readers better understand material related to their own culture, and whether thematic units are an effective method for building culturally related schemata. Within a pre- and posttest design, a class of 25 Scottish pupils and a class of 21 Texan students (ages 8 to 10 years) listened to a same-culture passage and answered a 10-item multiple-choice test. The groups then listened to an other-culture passage and answered a similar test. Students/pupils participated in a one-week other-culture thematic unit and took the other-culture test. T-tests showed no significant difference between same-culture and other-culture pretest scores for the Texan group, but the Scottish group scored significantly higher on the same-culture test than the other-culture test. Repeated measures of analysis of variance supported the effects of instruction with higher posttest that pretest scores for both groups. (Three tables of data are included; 23 references and 5 appendixes of data are attached.) (Author/RS)

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DOES KNOWLEDGE OF CULTURE AND INSTRUCTION USING THEMATIC UNITS AFFECT LISTENING COMPREHENSION

Dr. Barbara Erwin
University of Houston-Victoria
2506 Red River
Victoria, Texas 77901

Running Head: EFFECT OF CULTURAL SCHEMATA AND INSTRUCTION ON COMPREHENSION

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ABSTRACT

To help teachers discover effective strategies appropriate for ethnic minority students, the study asked (1) whether readers better understand material related to their own culture, and (2) are thematic units an effective method for building culturally related schemata. Within a pre- and post-test design, a class of twenty-five Scottish pupils and a class of twenty-one Texan students listened to a same-culture passage and answered a ten-item multiple-choice test. The groups then listened to an other-culture passage and answered a similar test. Students/pupils participated in a one-week other-culture thematic unit and took the other-culture post-test.. T-tests showed no significant difference between same-culture and other-culture pretest scores for the Texan group, but the Scottish group scored significantly higher on the same-culture test than the other-culture test. Repeated measures of ANOVA supported the effects of instruction with higher post-test than pretest scores for both groups.

THE EFFECT OF CULTURALLY RELATED SCHEMATA AND INSTRUCTION USING THEMATIC UNITS ON COMPRHENSION

The relationship between background knowledge and comprehension has been investigated for more than a decade. Studies of schema theory have shown that reading is an interactive process involving the author's message and the prior knowledge the reader brings to the task. It is the nature of this prior knowledge or background experience that should be of interest to teachers. If what readers know before they read affects how well they understand, what can teachers do to ensure that this background is developed? This development of background knowledge may be doubly important for teachers working with linguistically or culturally different learners. The purpose of this paper is to describe a cross-cultural study conducted in two classrooms: one in Texas and the other in Scotland. Within the framework of this study, this paper looks at the affect of culturally related schema on comprehension and assesses the effectiveness of instruction using thematic units upon the development of background knowledge.

BACKGROUND

Reading as an interactive process is described by Rumelhart (1976). He states that reading involves more than print itself, it involves the perceptual and cognitive processes used by readers in obtaining meaning. These cognitive processes, called schemata (Rumelhart, 1980), develop throughout a person's lifetime and influence his/her interpretation of text . Anderson, Reynolds, Schallert, and Goetz (1977) propose that the principal determinant of the knowledge a person can acquire from reading is the knowledge s/he already possesses. This concept is expanded by Reynolds and others (1982) who suggest that readers acquire meaning from text by analyzing words and sentences against the backdrop of their own personal knowledge of the world. They further write that personal knowledge is conditioned by age, sex, race, religion, nationality, occupation--in short, by a person's culture. Other research studies supporting the concept of culturally related schema affecting comprehension were conducted by Steffensen and others (1978) with Indian and American adults; Kintsch and Greene (1978) using Alaskan folk myths with a group of college-age students; Andersson and Barnitz (1984) studying a

population of sixth-grade students in Catholic and Greek Orthodox schools; and Pritchard (1990) in a study of proficient adolescent readers from the United States and the Pacific island nation of Palau. Erwin (1991) found that after hearing a story about their own culture, British and Texan pupils/students could generally speaking answer literal and inferential questions about the story. Sadoski, Paivio, and Goetz (1991) in a comprehensive review of research on schema theory state that if, as Steffenson, Joag-Dev, and Anderson (1979) propose, assigning culturally unfamiliar texts to readers amounts to assigning them bizarre texts, this may reflect the difficulties that ethnic minority children have in learning to read material written for the majority culture. They also propose that these findings may be among the most educationally relevant in the schema literature.

The effect of instruction on the development of background knowledge has also been documented. Studies by Stevens (1982) using direct instruction; Hayes and Tierney (1982) suggesting the use of analogies to relate background experiences to new information in the text; Sanacore (1983) with strategies such as PReP, Structured Overviews, PQ4R, Discourse Types, Response Heuristic, and Writing Patterns, as ways of integrating reading and writing to facilitate the use of prior knowledge; and the teaching of word meanings by Eeds and Cockrum (1985) appear in the literature. These research studies support teaching background information and comprehension strategy skills as a method of improving comprehension.

A strategy that has not been studied extensively is the use of thematic units to integrate curriculum and improve students' background for topics read. The idea of integrating instruction has been a part of educational thought throughout the second half of the twentieth century. The American Progressive Education movement proposed a project approach to instruction in the 1960's and 1970's which led to units being taught in science and social studies (Spodek, 1972). Thematic units have often been used in early childhood programs to coordinate activities, strengthen and reinforce desired teaching concepts, and meet specific needs of children (Eliason & Jenkins, 1986). During the 1990's there has been a resurgence of interest in thematic units as a method of integrating instruction across the curriculum. Thematic units are seen a way to link together content from many areas of the curriculum, depict the connections that exist across disciplines, and provide children ownership over their own learning (Pappas, Kiefer & Levstik, 1990). To do this, Kenneth

Goodman, in a discussion of thematic units in *The Whole Language Catalog* (1991), suggests that for units to be truly effective, they must (1) build knowledge, (2) develop problem solving and other cognitive strategies, and (3) improve self-confidence in the learner. Do thematic units which integrate curriculum, establish ownership, improve of self-confidence, and build knowledge, also improve student's ability to comprehend? Research is unclear on this point.

This study seeks to extend into a cross-cultural context.a position suggested by Pearson, Hanson, and Gordon (1979) in their historic study of the effect of schemata on the comprehension for second-grade children In the concluding portion of the article they state:

> What needs to be demonstrated is that students with weak schemata given direct instruction for concepts about the topic to be read subsequently comprehend more like students who come to the task with strong schemata than untreated students with weak schemata (p.207).

Assuming that members of a cultural group possess strong schemata for concepts and vocabulary relating to their culture, are they able to comprehend authentic texts which relate to that own culture better than authentic texts which do not? Secondly, are thematic units an effective strategy for developing background knowldge (to improve comprehension) for members of ethnic minority cultures who have limited or weak schemata for concepts relating to cultures other than their own?

METHOD

Design

This study was designed to answer two basic questions. One question addressed the nature of culturally related schema and its relationship to reading comprehension. Specifically question one asked, "Does a reader understand material reflecting his/her own culture better than material which does not?" The second question looked at the effect of instruction upon the development of background knowledge. For this study, question two posed the following query: "After receiving instruction based upon a thematic unit about a differing culture, does a reader's comprehension of other-culure text improve?"

To answer the questions above a simple pre- and post-test design was established. Two groups of students/pupils, a Scottish class and a Texan class,

listened to a story about their own culture and responded to a ten-item multiple choice test. The groups then listened to a story about the other culture and were given a similar test measuring concepts and vocabulary from the culturally different passage. Students/ pupils then participated in a one-week thematic unit about the different culture, again listened to the passage about the differing culture, and answered questions on the post-test for that passage. The research design for this study is presented in Table 1.

Insert Table 1 About Here

Subjects

The subjects included two classrooms of children (ages 8, 9, and 10). One classroom was a primary IV class (25 pupils) at Tillicoultry Primary School, Tillicoultry, Scotland. The other class was a third grade class (21 students) at Sam Houston Elementary School, Bryan, Texas.

Tillicoultry is a small town northwest of Edinburgh. The primary industry in the community is the milling of tartan cloth, but farming and ranching are also important to the economy. The school is large, containing more than 600 students in grades nursery through primary VII. Bryan is a medium-sized city in central Texas. Proximity to a major university, farming, ranching, and light industry provide a solid economic base for the community. Sam Houston Elementary is a large school of approximately 700 students in grades kindergarten through grade four. Both schools are located in middle-class areas and have only small numbers of minority children.

Because the design was developed to assess listening comprehension, not reading comprehension, no attempt was made to determine reading ability of students within the two groups Table 2 displays the characteristics of the two

groups in terms of age and gender.

Insert Table 2 About Here

As the data indicate, the Scottish group was slightly older(100% aged 9-10) than the Texan group (76.2 % aged 9-10), and contained a larger number of males (52%) than the Texan group (38.1%).

Materials

In the study, two chapters, one from each of two books, were used to assess listening comprehension. Important factors to the researcher were that the texts be authentic, not altered in any way, and be accessible to children in at least one of the two areas. While neither book had been read by either group, the books were available in libraries and/or bookstores in the two countries. The books were chosen by the researcher, but the availability, probability of interest to the students/pupils, and acceptability of content and vocabulary were evaluated by the head teacher of the Scottish school and the principal of the Texan school. The books met the following criteria:

1. Content of each chapter was of probable interest to children in the chosen classes.
2. Chapters included vocabulary and culturally relevant concepts.
3. Books were written by authors from the identified cultures (Scottish and Texan).
4. Stories were matched according to literary characteristics of genre, characterization, point of view, setting, and theme.

The two books chosen were *Cissy's Texas Pride* by Edna Smith Makerney (1975) and *Simon's Challenge* by Theresa Breslin (1988). The books shared the following criteria:

1. Exemplified genre of contemporary realistic fiction;
2. Reflected similar protagonists--a child approximately l0 years of age who appears to be mature beyond his/her age;

3. Contained a similar setting,
   - time--present (each chapter took place on a Saturday morning)
   - place--Scotland or Texas;
4. Structured into simple episodic plots based upon a family's struggle to overcome a hardship;
5. Shared a common theme--in times of need, family members can and should pull together to solve the problem.

Because of the length of the stories, only one chapter of each book was read to the children in the study. Relevant concepts within the chapters represented categories such as food, history, figurative language, clothing and equipment.

For each passage, twenty, four-item, multiple-choice questions were written using a modified Cloze format. The questions and copies of the chapters were submitted to the principal or head teacher of each school for evaluation. The principal of the Texan school and the head teacher of the Scottish school were asked to evaluate the passages and questions in terms of students'/pupils' familiarity with concepts, vocabulary, and testing format. The passages and questions were not given to either the classroom teachers or the pupils/students of each school. From the information gathered, ten multiple choice questions were chosen for each test: five literal and five inferential. The pre- and post-tests for each story were identical. Examples of questions, correct answers, and group responses can be found in Appendix A.

For instructional purposes two thematic units were developed. The development of the units by the researcher was based on information suggested by Pappas, Kiefer, and Levstik in their book, *An Integrated Language Perspective in the Elementary School: Theory into Action* (1990). The process consisted of choosing a theme (in this case the information provided in the culturally relevant text); brainstorming or webbing the relevant concepts; selecting materials; and choosing activities. What was missing from the

sequence suggested by Pappas, Kiefer, and Levstik was the sharing of the information with the students/pupils prior to instruction. Each unit was divided into five daily lessons which centered around the following questions:

1. What do Scottish/Texan children know about Texas/Scotland?
2. Where is Texas/Scotland located?
3. What does Texas/Scotland look like?
4. How old is the state/country?
5. How do Texan/Scottish children live, dress, eat, talk?

Embedded in each unit were the concepts identified for each chapter. Each unit involved a variety of instructional strategies and materials that enabled the pupils/students to gain knowledge of the other culture. Books were read, slides and pictures shown, food tasted, games played, etc. The two units were matched as carefully as possible both in terms of content and structure.

Procedure

The study took place in May, 1991. Each part of the study was conducted by the researcher with the assistance of the classroom teacher in each school. In each setting, early in May for the Texan class and later the same month for the Scottish class, the groups of pupils/students were given the tests for their culture on day one of the study. The tests were read to the children by the classroom teachers. This was done to eliminate any dialectical differences between the Scottish dialect of the Scottish pupils and the Texan dialect of the Texan researcher. These tests served as the control for the groups. Also on day one, the teachers read the passages and administered the pretests for the differing culture following the procedures stated above. For five consecutive days, beginning on day one and ending on day five, the researcher spent approximately 1 1/2 to 2 hours each day in each classroom teaching the thematic units for the differing cultures to each group of pupils/students. As closely as possible all procedures were standardized between the two groups. On the fifth day, the passages and post-tests for the differing cultures were administered to the classes, again by the classroom teachers.

RESULTS

The means and standard deviations for the two groups across the three tests are summarized in Table 4.

Insert Table 3 About Here

For both the Texan and the Scottish groups, the largest mean scores occurred for the test of the same culture. Texan students scored highest on the Texan test (M=6.19, SD=1.632), and the Scottish pupils scored highest on the Scottish test (M=6.64, SD=1.578). Conversely, the lowest performance scores were reported on the pretests for the other-culture, Texan students on the Scottish pretest (M=5.43, SD=1.912), and the Scottish pupils on the Texan pretest (M=5.16, SD=1.841). To compare the differences between the scores on the same-culture pretest and scores on the other-culture pretest, t-tests were run. The results were mixed. For the Texan group the difference between means was not significant (p=.179), while the Scottish group did score significantly higher on the same-culture test than they did on the other-culture test(p=.002). In general, the Scottish pupils were able to comprehend text from their own culture, better than text for another culture.

To evaluate the effects of instruction, a repeated measure ANOVA was performed using within-subject variables represented by the type of test (pre- and post-) crossed with a between-subject variable represented by cultural group. The data indicate that for both cultural groups scores were higher on the post-tests than the scores had been for the pretests. This differences in scores after instruction was significant, $F(1,44) = 5.32$, $p<.05$. For both cultural groups, students/pupils performed better after instruction based upon thematic units.

DISCUSSION AND IMPLICATIONS

To establish a relationship between culturally related schemata and comprehension, question one asked if readers understand material reflecting their own culture better than material which does not? For this study the answer is not clear. While the mean score of the Texan group on the Texan test was

greater than the mean score for the same group on the Scottish test, the difference was not significant. Yet for the Scottish group, a significant difference of means was found. Scottish pupils understood the Scottish text better than they did the Texan text.

The implications for the instruction of minority students inherent within this question are important. If cultural knowledge affects a reader's ability to understanding text, perhaps reading materials should be provided which enhance and support this knowledge. Instead of asking children to read books chosen solely by teachers, curriculum directors, or textbook publishers, perhaps they should be given the opportunity to self-select books which are meaningful to them. By providing classroom libraries containing a wide range of books which relate to the differing cultures, teachers give children the opportunity to build upon the knowledge of the world that they have gained as members of a cultural group. This cultural knowledge in turn may well facilitate comprehension. Perhaps one of the reasons minority children often lag behind their classmates from the majority culture is that instructional materials have not been matched to their area of strength, specifically their knowledge of their culture. Not only do these children have to learn the mechanics of reading, they also have to develop an understanding of cultural concepts which may differ from their own in order to comprehend what they read. Instead of teaching to their strengths, we may be inadvertently teaching to their weaknesses.

In this study, the second question looked at the effect of a particular method of instruction on comprehension. Specifically it looked at the effect of thematic units on the building of important background knowledge which then facilitates understanding. The answer to this question is indeed promising. For both groups in this study mean scores from pretest to post-test improved after instruction. Thematic units, structured to contain pertinent cultural information, apparently aided the student's/pupil's understanding of the "other" culture text. In other words, building students background knowledge of the world proved to be an aid to comprehension.

Again there are implications within these findings for the teaching of minority students. If classroom instruction can be organized so that curriculum is integrated, connections between between concepts are established, and language learning is encouraged, minority students may will be able to move into the area of success now enjoyed by students who are members of the majority culture. Perhaps the characteristics of integration and connectiveness

which are apparent in holistic instruction (and particularly within thematic units), are most needed by ethnic minority students For it is these students who because of the membership in a cultural group must not only develop and perfect their understanding of language, but also their understanding of the world.

SUMMARY AND CONCLUSIONS

The results of this study offers evidence that the understanding of cultural knowledge (schemata) as it relates to comprehension may prove to be a useful tool for educators as they attempt to provide quality education for all students. With this knowledge, teachers and administrators will be able to choose materials, adjust instruction, and write curriculum so that all children can succeed. While this study was conducted with two distinct cultural groups separated by thousands of miles, it is strongly recommended that the study be extended to cultural groups sharing the same geographic area. In so doing, several limitations of this particular study should be addressed. Future studies should provide reliability data on the test questions written to assess the cultural information. In this study, while the content of the questions was evaluated by the principal or head teacher of the two schools, no attempt was made to determine reliability. A second weakness which must be addressed in future work is an allowance made for practice effect between the two tests (pre- and post- for the same culture). Perhaps a longer time-frame for the instructional units, which would provide an extended period of time between the pre-and post-testing, might be possible. A third area of concern in future study is the need for researchers to be acutely aware of the individual differences between students within cultural groups. The tendency in research of this type is to assume that all members of each group are alike. For this study, there was a great deal of diversity within each of the cultural groups. Not all Texan students had strong schemata for cowboys and ranches, and many of the Scottish pupils knew little about the Roman invasion of Britain (percentages of group answers for individual questions can be found in Appendix A). By noting the relationship between cultural schemata and comprehension and demonstrating that thematic units are a viable instructional strategy for building cultural background, this study supports the contention (Pearson, Hanson, & Gordon, 1979) that schema can be developed through instructon.

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Table 1 *Research design*

Group	Pretest		Treatment		Post-test	
	Scot Test	Tex Test			Scot Test	Tex Test
Tex	X	X	Scot	Unit	X	O
Scot	X	X	Tex	Unit	O	X

Table 2 *Comparison of groups by age and gender*

		Texan Group (N=21)	Scottish Group (N=25)
Age	8	23.8	00.0
	9	61.9	76.0
	10	14.3	24.0
Gender	Female	61.9	48.0
	Male	38.1	52.0

Note. Data represents percentages of each group.

Table 3 *Means and standard deviations for cultural groups across pre- and post-tests for both test types*

	Cultural Groups			
	Texan		Scottish	
	pretest	post-test	pretest	post-test
Texan Test				
Mean	6.19	---	5.43	6.00
SD	(1.632)	---	(1.912)	(1.761)
Scottish Test				
Mean	5.16	6.04	6.64	---
SD	(1.841)	(1.947)	(1.578)	---

Appendix A
Comparison of Scores of Children in the Two Groups on the Texas Test

Question	Concept	Scot Group Pretest	Scot Group Post-test	Tex Group Pretest
Q1*	clothing	30.8	26.9	85.7
Q2*	breakfast	3.8	19.2	19.0
Q3	figurative language	96.2	92.3	81.0
Q4*	pick-up truck	30.8	3.8	66.7
Q5	mesquite	46.2	69.2	81.0
Q6*	corral	50.0	46.2	42.9
Q7	brands	15.4	15.4	0.0
Q8*	cutting horse	57.7	76.9	76.2
Q9	branding to prove ownership	69.2	84.6	71.4
Q10	price for horse	80.8	80.8	85.7

*inferential comprehension questions

Appendix B
Comparison of Scores of Children in the Two Groups on the Scottish Test

Question	Concept	Tex Group Pretest	Tex Group Post-test	Scot Group Pretest
Q1*	jumper	9.5	38.1	92.3
Q2*	potato scones	33.3	57.1	57.7
Q3*	position of Antonine Wall	23.8	61.9	30.8
Q4*	Clyde	23.8	42.9	76.9
Q5*	Scottish climate	66.7	33.3	73.1
Q6	little bread soldiers	71.4	95.2	84.6
Q7	cost of nappy	66.7	90.5	84.6
Q8	precinct	9.5	33.3	7.7
Q9	colour-in poster	66.7	66.7	80.8
Q10	Roman coins	81.0	95.2	88.5

*inferential comprehension questions

Appendix C
Improvement in Scores after Instruction across Tests, Groups, and Question Type

Test	Question		Question Type	Pre test	Post test	Improve-ment
				Tex	Tex	
Scot	Q1	jumper	Inf	9.5	38.1	28.6
	Q2	potato scones	Inf	33.3	57.1	23.8
	Q3	location of Antonine Wall	Inf	23.8	61.9	38.1
	Q4	Clyde	Inf	23.8	42.9	19.1
	Q5	Scottish weather	Inf	66.7	33.3	-33.4
	Q6	bread soldiers	Lit	71.4	95.2	23.8
	Q7	cost of nappy	Lit	66.7	90.5	23.8
	Q8	precinct	Lit	9.5	33.3	23.8
	Q9	colour-in poster	Lit	66.7	66.7	00
	Q10	Roman coins	Lit	81.0	95.2	14.2
				Scot	Scot	
Tex	Q1	wearing jeans	Inf	28	28	00
	Q2	biscuits	Inf	16	00	-16
	Q4	pick-up	Inf	32	60	28
	Q6	corral	Inf	52	48	-04
	Q8	cutting horse	Inf	56	80	24
	Q3	figurative language	Lit	96	96	00
	Q5	mesquite	Lit	44	72	28
	Q7	brand	Lit	16	16	00
	Q9	reason for branding	Lit	68	88	20
	Q10	cost of horse	Lit	80	84	04

Appendix D
Answers to Literal Questions across Groups and Tests

Test	Question		Most Frequent Answer(s)	% Questions Answered	
				Scot (pre)	Tex (post)
Scot	Q6	breakfast	little bread* soldiers	84	95
	Q7	cost of nappy	pound*	84	90.5
	Q8	leaving town centre	precinct* housing estate	9.5 56	33.3 23.8
	Q9	leaflet contained	colour-in poster*	84	66.7
	Q10	number coins	fifty coins*	88	95.2
				Tex (pre)	Scot (post)
Tex	Q3	Cissy said to father mile"*	"I'll beat you by a country	81	96
	Q5	gather mesquite	build fire for branding irons*	81	72
	Q7	name of brand	Play Boy Texas Pride (neither was correct)	42.9 38.1	12 64
	Q9	reason branding cattle	prove ownership*	71.4	88
	Q10	cost horse	$600*	85.7	84

*correct response

Appendix E
Answers to Inferential Questions across Groups and Tests

Test	Question		Most Frequent Answer(s)	% Questions Answered	
				Scot (pre)	Tex (post)
Scot	Q1	jumper	sweater*	92	38.1
			dress	04	38.1
	Q2	potato scones	pancakes*	56	57.1
	Q3	location of Anto-nine wall	widest	40	14.3
			narrowest*	32	61.9
	Q4	Clyde	river or firth*	80	42.9
	Q5	Scottish climate	mild summers & cold winters*	76	33.3
			mild winters & summers	04	38.1
				Tex (pre)	Scot (post)
Tex	Q1	reason for wearing jeans	protection*	85.7	28
			desire	00	48
	Q2	biscuits	muffins*	71.4	0
			cookies	00	80
	Q4	pick-up	small truck*	66.7	60
	Q6	corral	cattle pen*	42.9	48
	Q8	cutting horse	to herd cattle*	76.2	80

*correct response